

What is claimed is:

1. A method for applying a fluid lubricant to a hydrodynamic bearing having clearance spaces separating bearing parts of the bearing and defining at least one pathway extending to an external surface of the bearing, said method comprising the steps of:

reducing clearance space pressure levels of the clearance spaces to reduced pressure levels relative to an ambient pressure level;

applying the fluid lubricant to the clearance spaces, and

returning the clearance space pressure levels to levels above the reduced pressure levels.

2. The method of claim 1 further comprising the step of surrounding at least portions of the bearing with the fluid lubricant.

3. The method of claim 1 further comprising an introductory step of isolating the clearance spaces from the ambient pressure level.

4. The method of claim 3 wherein the at least one pathway extending to the external surface of the bearing defines a pathway opening at the external surface, and wherein said step of isolating comprises the step of positioning a cap member about the pathway opening.

5. The method of claim 4 wherein the cap member positionable about the pathway opening during said step of positioning is connectable to a source of fluid lubricant, to a vacuum pressure source, and to an ambient pressure level source, and wherein

said step of reducing comprises connecting the cap member to the vacuum pressure source.

6. The method of claim 5 wherein said step of applying comprises connecting the cap member to the source of fluid lubricant.

7. The method of claim 5 wherein said step of returning comprises connecting the cap member to the ambient pressure level source.

8. The method of claim 5 wherein the cap member is further connectable to a drain discharge line and said method comprises the further step of connecting the cap member to the drain discharge line to discharge excess amount of liquid lubricant applied during said step of applying.

9. The method of claim 3 wherein the at least one pathway comprises a first pathway formed at a first axial side portion of the bearing and defining a first pathway opening at the external surface of the bearing and a second pathway formed at a second axial side portion of the bearing and defining a second pathway opening at the external surface of the bearing, and wherein said step of isolating comprises the steps of: positioning a first cap member about the first pathway opening and positioning a second cap member about ^{the} ~~a~~ second pathway opening.

10. The method of claim 9 wherein the first cap member is positionable about the first pathway during said step of positioning and is connectable to a source of fluid lubricant by way of a lubricant valve, to a vacuum pressure source by way of a

vacuum valve, and to an ambient pressure level source by way of a vent valve, and wherein said step of reducing comprises opening the vacuum valve to connect the vacuum pressure source to the first cap member and, by way of the first pathway, to the clearance spaces.

11. The method of claim 10 wherein said step of applying comprises the steps of: closing the vacuum valve and opening the lubricant valve to connect the source of fluid lubricant to the first cap member and, by way of the first pathway, to the clearance spaces.

12. The method of claim 11 wherein said step of applying further comprises pushing the fluid lubricant into the bearing.

13. The method of claim 11 wherein said step of returning comprises the step of opening the vent valve to connect the ambient pressure level source to the first cap member and, by way of the first pathway, to the clearance spaces.

14. The method of claim 3 wherein said step of isolating comprises the step of transporting the bearing into a vacuum tank containing a pool of the lubricant.

15. The method of claim 14 wherein said step of reducing comprises evacuating the vacuum tank after the bearing is transported into the vacuum tank.

16. The method of claim 15 wherein said step of applying comprises the steps of transporting the bearing into the pool of the lubricant.

17. The method of claim 16 wherein said step of returning comprises raising pressure levels of the vacuum tank evacuated during said step of the evacuating and transporting the bearing out of the
5 pool of the lubricant.

18. The method of claim 17 wherein said step of transporting the bearing into the vacuum tank, transporting the bearing into the pool, and transporting the bearing out of the pool, comprise
5 the steps of: positioning the bearing upon a conveyer, conveying the bearing on the conveyer into the vacuum tank, conveying the bearing into the pool, and conveying the bearing out of the pool.

19. The method of claim 1 comprising the further step of heating the fluid lubricant prior to the step of applying the fluid lubricant to the clearance spaces.

20. The method of claim 1 comprising the further step of altering at least one axial orientation of the hydrodynamic bearing after the fluid lubricant is applied to the clearance spaces.

21. The method of claim 1 comprising the further introductory step of positioning the hydrodynamic bearing in a desired orientation.

22. An apparatus for applying a fluid lubricant to a hydrodynamic bearing having clearance spaces separating bearing parts of the bearing and

5 defining at least one pathway extending to an
external surface of the bearing, said apparatus
comprising:

means for reducing clearance space pressure
levels of the clearance spaces;

10 means for surrounding at least portions of the
bearing with the fluid lubricant, thereby to isolate
the clearance spaces from an ambient pressure level;

means for applying the fluid lubricant to the
clearance spaces; and

15 means for returning the clearance space
pressure levels to the ambient pressure levels once
the fluid lubricant is applied by said means for
applying.

23. An apparatus for applying a fluid
lubricant to a hydrodynamic bearing having clearance
spaces separating bearing parts of the bearing and
defining at least one pathway extending to an
5 external surface of the bearing to define a pathway
opening thereat, said apparatus comprising:

a first cap member positionable in sealing
engagement about the least one pathway opening;

10 a vacuum valve positioned between said first
cap member and a vacuum pressure source, said vacuum
valve actuatable into an open position for forming a
first fluid connection between the vacuum pressure
source and the clearance spaces and for
depressurizing the clearance spaces of the bearing;

15 a lubricant valve positioned between said first
cap member and a source of the fluid lubricant, said
lubricant valve actuatable into an open position for
forming a second fluid connection between the source
of fluid lubricant and the clearance spaces and for
20 applying the liquid lubricant to the clearance
spaces; and

a vent valve positioned between said first cap member and an ambient pressure level source, said vent valve actuatable into an open position for forming a third fluid connection between the ambient pressure level source and the clearance spaces and for venting the clearance spaces to an ambient pressure level of the ambient pressure level source.

24. The apparatus of claim 23 further comprising a drain valve positioned between a drain element and said first cap member, said drain valve actuatable into an open position for draining excess amounts of fluid lubricant applied to the clearance spaces.

25. The apparatus of claim 23 wherein the at least one pathway comprises a first pathway formed at a first axial side portion of the bearing and defining a first pathway opening at the external surface of the bearing and a second pathway formed at a second axial side portion of the bearing and defining a second pathway opening at the external surface of the bearing, wherein said first cap member is positionable about the first pathway opening, and wherein said apparatus further comprises a second cap member positionable about the second pathway opening.

~~26. An apparatus for applying a fluid lubricant to a hydrodynamic bearing having clearance spaces separating bearing parts of the bearing and having at least one pathway extending between an external surface of the bearing and the clearance spaces, said apparatus comprising:~~

a vacuum tank, said vacuum tank having a pressure level adjustable between and ambient pressure level and an evacuated pressure level;

10 a pool of the fluid lubricant supported in the tank; and

a conveyer for conveying the bearing into said vacuum tank, through said pool of the fluid lubricant, beyond said pool, and out of said vacuum
15 tank.